

NOTES ON TWO INSTANCES OF ABNORMALITY IN  
THE COURSE AND DISTRIBUTION OF THE  
RADIAL ARTERY. By ARTHUR THOMSON, M.B., *Senior  
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THE first of these conditions consisted of a low division of the brachial artery into radial and ulnar. The radial was of small size, and was joined near the wrist by the anterior interosseous, which formed the channel through which the blood passed to those portions of the hand usually supplied by the radial. Curiously enough, this condition existed in both arms of the same subject, though in one instance the slender representative of the radial artery had been missed by the dissectors. The brachial artery passed down in front of the elbow until it reached a point three inches below the level of the internal condyle. At this point, as it lay under cover of the pronator radii teres, the artery divided into the ulnar and a trunk common to the anterior interosseous, posterior interosseous, and abnormal radial.

At the point at which the artery usually divides into radial and ulnar, we found arising from its outer side a branch which in course and distribution corresponded to the recurrent radial artery.

The subsequent course of the ulnar artery was normal.

The other trunk, which in position and source of origin corresponded to the common interosseous artery, remained undivided for about one-eighth of an inch; it then broke up into—

- (1.) Posterior interosseous.
- (2.) Anterior interosseous.
- (3.) Trunk giving origin to the radial.

The two former were normal in position.

With regard to the latter, it was traced down for an inch in company with the median nerve beneath the pronator radii teres. At this point it gave off a branch which was of small size, the *cornes nervi mediani*. This branch was subsequently lost in the substance of the flexor sublimis digitorum. After giving off this branch the radial artery passed toward the outer side of the fore-arm, concealed by the pronator radii teres under

cover of the radial head of origin of the flexor sublimis digitorum, and resting on the flexor longus pollicis, just inferior to the insertion of the pronator radii teres the artery became superficial, and lay between the tendons of the supinator longus and flexor carpi radialis.

The artery was, however, very small, and quite insufficient for the supply of those parts to which it is usually distributed, hence its subsequent course was followed with interest.

Close to the lower border of the pronator quadratus the diminutive radial, as it lay between the tendons of the supinator longus and flexor carpi radialis, was joined by an artery of the calibre of the normal radial.

This artery was traced inward along the lower border of the pronator quadratus under cover of the tendons of the flexor carpi radialis, flexor longus pollicis, and flexor profundus digitorum, and was found to be continuous with the anterior offset of the anterior interosseous artery beneath the pronator quadratus.

The radial artery augmented by its junction with this branch, which is to be regarded merely as an enlargement of the anastomoses between the anterior radial carpal branch and the branches from the anterior interosseous, then gave origin to the superficialis volæ, which was of small size and appeared like a direct continuation of the slender radial. In other respects the distribution was normal, the combined artery passing round the wrist and following the course of a normal radial.

A precisely similar condition existed in the opposite arm of the same subject, though the slender radial had not been traced to its junction with the anterior interosseous at the wrist.

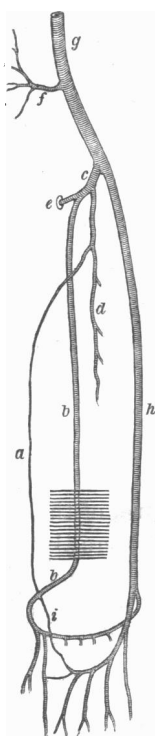
The instances on record of this condition are not very numerous, especially such a condition as the foregoing, where, in addition to the radial being augmented at the wrist by the anterior interosseous, the radial itself arose at an abnormally low point in the fore-arm.

Instances of low origin of the radial are recorded in "Quain," (pl. xxxv. fig. 4), and in Henle (*Handbuch der Gefäßlehre*, p. 270), who quotes a number of instances. In the example figured by Quain (pl. xxxv. fig. 4) the method of origin and course of the artery was much the same as that recorded in the present in-

stance, with this difference, however, that in Quain's case the artery was of considerable size, and was joined at the lower border of the *prator radii teres* by a *vas aberrans*.

Quain, in pl. xlv. fig. 1, figures a case of the anterior interosseous compensating the slender radial at the wrist, but in this example the radial was derived from the axillary artery.

Henle describes the condition in which the radial may be augmented at the wrist by a branch from the anterior interosseous, which may either pass superficial to or beneath the *pronator quadratus*, and quotes "Tiedemann" (pl. xlv. fig. 3).



- a*, abnormal radial artery ;
- bb*, anterior interosseous ;
- c*, trunk common to interosseous, radial, and median branches ;
- d*, median artery ;
- e*, posterior interosseous artery ;
- f*, recurrent radial ;
- g*, brachial,
- h*, ulnar, and
- i*, superficial volar arteries.

*Case II.*—In the second instance which we propose recording, the radial artery was seen to be joined by an offset of the anterior interosseous, precisely similar to that described in the foregoing notes. Here, however, the offset of the anterior interosseous was of small size, and its interest entirely depended upon the explanation which it afforded of the previous condition,

which undoubtedly merely consisted of an enlargement of this channel of anastomosis. In its subsequent course and distribution the radial varied much from the normal. Reaching the interval between the bases of the metacarpal bones of the thumb and index, the artery split up into three branches; of these two were large and of equal size. The third, much smaller, was the metacarpal branch, and supplied the dorsal aspect of the second and third interosseous spaces.

Of the remaining two trunks one followed the normal course by passing between the two heads of the abductor indicis, previous to which it gave off the *dorsalis indicis*. Tracing this artery onward, we found it normal in position but abnormal in the distribution of its branches. Thus, as it lay under cover of the inner head of the flexor brevis pollicis, it gave off a branch of considerable size, which crossed the metacarpal bone of the index finger beneath the adductor pollicis, and terminated on the *ulnar* side of that digit; in addition, as the artery lay deeply in the palm, forming the deep arch, it gave off four palmar interosseous branches.

Passing back to the other branch into which the radial divided, it was traced over the dorsal aspect of the origin of the abductor indicis from the metacarpal of the thumb. Reaching the distal border of that attachment, it lay upon the dorsal surface of the inner portion of the flexor brevis pollicis, the fibres of which it immediately pierced, appearing anteriorly close to the head of the metacarpal bone of the thumb, under cover of the attachment of the adductor and flexor brevis pollicis. Here the artery split up into branches, one of which passed to the ulnar side of the pollex, the other crossed the palmar aspect of the adductor and inner attachment of the flexor brevis pollicis close to their insertion, communicated with the superficial palmar arch, and terminated by supplying the radial side of the index finger.

The radial side of the thumb was supplied by a branch from the *superficialis volæ*.

The *superficialis volæ* was of large size, and completed the superficial arch from which the digital arteries arose quite normally, that supplying the ulnar side of the index joining the branch already described as being derived from the radial.

The instances of abnormality in the distribution of the digital

arteries are so numerous that their analysis is difficult. Fig. 2, plate xl., "Quain," approaches more nearly to the description given above, especially in regard to the origin of the digital branches to the thumb and ulnar side of the index finger, but differs in the formation of the other palmar digital branches which are in part derived from the ulnar, in part from the median artery in the hand. In the present instance, these were derived from the superficial palmar arch, which in formation and position was normal.